
Chapter 7 Test

1. Knowledge and Understanding

Identify each conic and state its centre.

(a) $(x - 1)^2 - 2(y + 3)^2 = 18$

(b) $16x^2 + 9y^2 - 18y - 135 = 0$

(c) $\frac{(x-2)^2}{4} + \frac{(y+1)^2}{4} = 1$

2. Application, Communication

Describe, both algebraically and geometrically

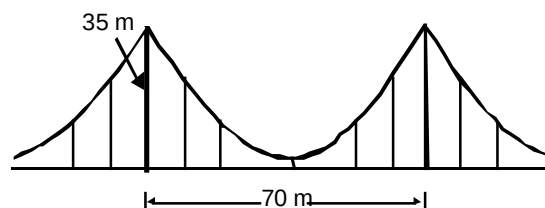
(a) the locus of points that are 6 units from point $(2, -5)$

(b) the locus of points equidistant from points $A(0, 4)$ and $B(-2, 0)$

(c) the locus of points equidistant from point $(0, 4)$ and line $y = -4$

3. Thinking, Inquiry, Problem Solving

For the bridge in this diagram, the top cables seem to form a parabola. Find an equation to model the length of the cable between the two bridge towers. Assume that the vertical cable in the centre is 1 m high. Your model should relate the length of each cable as a function of the distance from the centre. Be sure to explain your work.



4. Knowledge and Understanding

Draw an accurate, well-labelled graph of each conic. Indicate, where appropriate

i. the vertices

ii. the foci

iii. the asymptotes

(a) $9x^2 + 4y^2 - 18x + 16y = 11$

(a) $8x^2 - 36y^2 = 2916$

5. Thinking, Inquiry, Problem Solving; Communication

Find the equation of a line that intersects the conic $x^2 - 4x - 2y + 2 = 0$

(a) at exactly two points

(b) at exactly one point

Provide both algebraic and graphical solutions to verify your equations.